

1. A polishing pad for polishing a substrate in a chemical mechanical polishing apparatus, comprising:

— a first polishing region having a first plurality of substantially circular concentric grooves with a first width and a first pitch;

a second polishing region surrounding the first polishing region and having a second plurality of substantially circular concentric grooves with a second width and a second pitch; and

wherein at least one of the second width and second pitch differs from the first width and first pitch.

2. The polishing pad of claim 1, further comprising a third polishing region surrounding the second polishing region and having a third plurality of substantially circular concentric grooves with a third width and a third pitch.

3. The polishing pad of claim 2, wherein the third width and pitch are equal to the first width and pitch, respectively.

4. The polishing pad of claim 3, wherein the first pitch is larger than the second pitch.

5. The polishing pad of claim 4, wherein the first pitch is about two times larger than the second pitch.

6. The polishing pad of claim 3, wherein the first width is less than the second width.

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1 ¹³~~7~~. The polishing pad of claim ¹²~~6~~, wherein the
2 second width is about six time greater than the first width.

1 ⁴~~8~~. The polishing pad of claim 1, wherein each
2 groove of the first and second pluralities of grooves has a
3 depth of at least about 0.02 inches, a width of at least
4 about 0.015 inches, and a pitch of at least about 0.09
5 inches.

1 ⁵~~9~~. The polishing pad of claim ⁴~~8~~, wherein each
2 groove of the first and second pluralities of grooves has a
3 depth between about 0.02 and 0.05 inches.

1 ⁶~~10~~. The polishing pad of claim ⁴~~8~~, wherein each
2 groove of the first and second pluralities of grooves has a
3 width between about 0.015 and 0.04 inches.

1 ⁷~~11~~. The polishing pad of claim ⁴~~8~~, wherein each
2 groove of the first and second pluralities of grooves has a
3 pitch between about 0.09 and 0.24 inches.

1 ⁸~~12~~. The polishing pad of claim 1, wherein the first
2 plurality of grooves are separated by a first plurality of
3 annular partitions and the second plurality of grooves are
4 separated by a second plurality of annular partitions.

1 ³⁰³~~13~~. The polishing pad of claim 12, wherein the
2 first plurality of partitions cover about 75% of the surface
3 area of the first region and the second plurality of
4 partitions cover about 50% of the surface area of the second
5 region.

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4 substantially circular concentric grooves; and
5 a second polishing region surrounding the first
6 polishing region and having a plurality of substantially
7 serpentine grooves.

1 21. The polishing pad of claim 20, wherein the
2 circular grooves have a first pitch, and the serpentine
3 grooves have a second, different pitch.

1 22. The polishing pad of claim 20, wherein the
2 circular grooves have a first width, and the serpentine
3 grooves have a second, different width.

1 23. The polishing pad of claim 20, wherein the
2 serpentine grooves have a pitch between about one and two
3 times their amplitude.

1 24. The polishing pad of claim 20, wherein the
2 serpentine grooves have a pitch between about one-and-one-
3 half and two times their width.

1 25. The polishing pad of claim 20, wherein the
2 serpentine grooves have a width of about 0.125 inches, a
3 pitch of about 0.2 inches, and an amplitude between about
4 0.2 and 0.4 inches.

1 26. The polishing pad of claim 20, further
2 comprising a third polishing region surrounding the second
3 polishing region and having a second plurality of
4 substantially circular concentric grooves.

1 27. A polishing pad for polishing a substrate in a

2 groove of the first and second pluralities of grooves has a
3 depth of at least about 0.02 inches, a width of at least
4 about 0.015 inches, and a pitch of at least 0.09 inches.

1 33. A polishing pad for polishing a substrate in a
2 chemical mechanical polishing apparatus, comprising:
3 a first polishing region having a first plurality of
4 substantially circular concentric grooves; and
5 a second polishing region surrounding the first
6 polishing region and having a plurality of groove arc
7 segments, the groove arc segments disposed along concentric
8 circular paths such that each groove arc segment does not
9 radially overlap a groove arc segment on an adjacent path.

1 34. The polishing pad of claim 33, wherein the
2 circular grooves have a first pitch, and the circular paths
3 have a second, different pitch.

1 35. The polishing pad of claim 33, wherein the
2 circular grooves have a first width and the groove arc
3 segments have a second, different width.

1 36. The polishing pad of claim 33, further
2 comprising a third polishing region surrounding the second
3 polishing region and having a second plurality of
4 substantially circular concentric grooves.

1 37. The polishing pad of claim 33, wherein the
2 circular grooves and groove arc segments have a depth of at
3 least about 0.02 inches, a width of at least about 0.015
4 inches, and a pitch of at least 0.09 inches.

